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(21) Application number: **09088522**(22) Date of filing: **07.04.97**(30) Priority: **28.03.97 JP 09 78327**(71) Applicant: **SANYO ELECTRIC CO LTD**(72) Inventor: **NAKAJIMA HIROSHI**(54) **PORTABLE INFORMATION TERMINAL
EQUIPMENT**

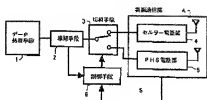
4 or the PHS telephone part 5.

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(57) Abstract:

PROBLEM TO BE SOLVED: To facilitate an operation, to improve convenience and to reduce a communication charge by automatically switching a telephone function selected by an application software to be utilized and/or a charge.

SOLUTION: The output of a data processing means 1 is inputted and a detection means 2 detects the output data of which application software executed in the data processing means 1 it is. To a control means 6, priority information which is the output of the detection means 2 and signals S for indicating whether or not cellular telephone 4 and a PHS telephone part 5 are communicable from a radio communication part A are supplied. The control means 6 selects the communicable telephone part of high priority among the cellular telephone parts based on the priority information and the signals S and outputs switching signals. A switching means 3 is changeover-controlled corresponding to the switching signals from the control means 6. As a result, the data processed by the executed application software are selectively supplied to the cellular telephone part



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(30)Priority

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(54) PORTABLE INFORMATION TERMINAL EQUIPMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To facilitate an operation, to improve convenience and to reduce a communication charge by automatically switching a telephone function selected by an application software to be utilized and/or a charge.

SOLUTION: The output of a data processing means 1 is inputted and a detection means 2 detects the output data of which application software executed in the data processing means 1 it is. To a control means 6, priority information which is the output of the detection means 2 and signals S for indicating whether or not cellular telephone 4 and a PHS telephone part 5 are communicable from a radio communication part A are supplied. The control means 6 selects the communicable telephone part of high priority among the cellular telephone parts based on the priority information and the signals S and outputs switching signals. A switching means 3 is changeover-controlled corresponding to the switching signals from the control means 6. As a result, the data processed by the executed application software are selectively supplied to the cellular telephone part 4 or the PHS telephone part 5.

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- 3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] Portable information terminal equipment which makes available selectively either of said two or more wireless communication means with a priority determined based on contents which have two or more wireless communication means, and are transmitted and received using a fee and/or said wireless communication means.

[Claim 2] Portable information terminal equipment comprising:
Two or more wireless communication means.

A data processing means which performs two or more application software which performs respectively different processing.

A detection means to detect application software performed based on information received from a data processing means, and to generate priority information of two or more of said wireless communication means.

A means to generate communication propriety information on said two or more wireless communication means, an output of said detection means and a control means which outputs a switching signal according to said communication propriety information, and a means for switching that enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

[Claim 3] Portable information terminal equipment comprising:
Two or more wireless communication means.

A selected designation means to make possible selected designation of application software performed to a user, and to generate priority information of two or more of said wireless communication means.

A means to generate communication propriety information on said two or more wireless communication means.

An output of said selected designation means, a control means which outputs a switching signal according to said communication propriety information, and a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

[Claim 4] Portable information terminal equipment comprising:
Two or more wireless communication means.

An interface means for an entry of data.

A detection means to detect data inputted via said interface means, and to generate priority information of two or more of said wireless communication means.

A means to generate communication propriety information on said two or more wireless communication means, an output of said detection means and a control means which gives a switching signal according to said communication propriety information, and a means for switching that enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

[Claim 5] Portable information terminal equipment comprising:
Two or more wireless communication means.

A data processing means which performs two or more application software which performs respectively different processing.

A detection means to detect application software performed based on information received from a data processing means, and to generate priority information of two or more of said wireless communication means.

A means to generate communication propriety information on said two or more

wireless communication means, and a detection means to generate information which shows a current position, A memory measure information about a fee for every wireless communication means matched with a place-of-dispatch region and a mail arrival area was remembered to be, A fee priority acquired from said memory measure by acquiring a fee priority based on an output and a message serial number of said detection means, an output of said detection means, and a control means which outputs a switching signal according to said communication propriety information, A means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

[Claim 6] Portable information terminal equipment comprising:

Two or more wireless communication means.

A selected designation means to make possible selected designation of application software performed to a user, and to generate priority information of two or more of said wireless communication means.

A means to generate communication propriety information on said two or more wireless communication means.

A detection means to generate information which shows a current position, and a memory measure information about a fee for every wireless communication means matched with a place-of-dispatch region and a mail arrival area was remembered to be, A fee priority acquired from said memory measure by acquiring a fee priority based on an output and a message serial number of said detection means, an output of said detection means, and a control means which gives a switching signal according to said communication propriety information, A means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

[Claim 7] Portable information terminal equipment comprising:

Two or more wireless communication means.

An interface means for input and output of data.

A detection means to detect data inputted via said interface means, and to generate priority information of two or more of said wireless communication means.

A means to generate communication propriety information on said two or more wireless communication means, and a detection means to generate information which shows a current position, A memory measure information about a fee for every wireless communication means matched with a place-of-dispatch region and a mail arrival area was remembered to be, A fee priority acquired from said memory measure by acquiring a fee priority based on an output and a message serial number of said detection means, an output of said detection means, and a control means which outputs a switching signal according to said communication propriety information, A means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

[Claim 8] The portable information terminal equipment according to claim 4 or 7 a detection means' detecting type information different from data inputted via an interface means, and generating priority information of two or more wireless communication means.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]

[Field of the Invention] This invention relates to portable information terminal equipment.

[0002]

[Description of the Prior Art] In recent years, various kinds of mobile phones, such as a cellular phone and PHS (Personal Handyphone System), have spread. then, **** which gives a user troublesomeness since these communication terminal devices need button grabbing in order to switch to a desired communication function although the communication terminal device in the many modes in which it has two or more communication functions including a pager etc. is considered -- when -- there was ***** . In order to solve this, when the function of a cordless telephone is operated by an initial state and it is able to communicate with a main phone with a terminal unit with both the functions of a cordless telephone and a cellular phone, operate a cordless telephone as it is. When it is not able to communicate, the art of raising convenience so that it may switch to the function of a cellular phone automatically and may be made operating is indicated by JP,4-351127,A.

[0003]

[Problem(s) to be Solved by the Invention] Although the cellular phone can communicate also in high speed movement and it has the merit that service areas are large, there is also a demerit that a utilization charge is expensive. On the other hand, although there is a merit of having turned to the future multimedia communication in which the utilization charge of PHS is cheap and the high-speed transmission of data is possible, also in a demerit, like it is narrow now, there are it being unable to use and service areas during high speed movement in the train. Thus, although various mobile phones have spread now, there is the respectively original feature in those functions and performances.

[0004] However, in above-mentioned conventional technology, the change in which the original feature which various kinds of telephone services have was employed efficiently cannot be performed easily, but the user's himself judgment is needed for performing these changes. This invention is made that the starting problem should be solved and can choose automatically the optimal phone system for the application software which a user uses. A scarce user does not need exceptional operation for the knowledge of a phone system or application software, either, but it aims at moreover aiming at reduction of communication charges.

[0005]

[Means for Solving the Problem] In order that portable information terminal equipment of this invention may solve an above-mentioned problem, it has two or more wireless communication means, A priority is determined based on contents transmitted and received using a fee and/or said wireless communication means, and either of said two or more wireless communication means is made available with this priority.

[0006] Two or more wireless communication means and a data processing means which performs two or more application software which performs respectively different processing, A detection means to detect application software performed based on information received from a data processing means, and to generate priority information of two or more of said wireless communication means, A means to generate communication propriety information on said two or more wireless communication means, and an output of said detection means and a control means which outputs a switching signal according to said communication propriety information, It had a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

[0007] Two or more wireless communication means and a selected designation means to make possible selected designation of application software performed to a user, and to generate priority information of two or more of said wireless communication means, A means to generate communication propriety information on said two or more wireless communication means, and an output of said selected

designation means and a control means which outputs a switching signal according to said communication propriety information, It had a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

[0008]Two or more wireless communication means and an interface means for an entry of data, A detection means to detect data inputted via said interface means, and to generate priority information of two or more of said wireless communication means, A means to generate communication propriety information on said two or more wireless communication means, and an output of said detection means and a control means which gives a switching signal according to said communication propriety information, It had a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

[0009]A detection means to generate information which shows a current position further to these inventions, and a memory measure information about a fee for every wireless communication means matched with a place-of-dispatch region and a mail arrival area was remembered to be are established, A control means outputs a switching signal according to an output and said communication propriety information on a fee priority acquired from said memory measure by acquiring a fee priority, said detection means, or a selected designation means based on an output and a message serial number of a detection means.

[0010]A detection means detects type information with another data inputted via an interface means, and generates priority information of two or more wireless communication means.

[0011]

[Embodiment of the Invention]Drawing 1 is a block diagram showing the portable information terminal equipment concerning this invention. The Radio Communications Department A consists of the cellular phone part 4 and the PHS telephone section 5. The cellular phone part 4 has a communication function of a cellular phone, and the PHS telephone section 5 has a communication function of a PHS telephone. The application software for performing processing of access to a voice call, personal computer communications, a file transfer, a TV phone, and the Internet, etc. can be memorized, and the data processing means 1 can be, can perform those applications, and can output data.

[0012]The output of a data processing means is inputted and the detection means 2 detects of which application software performed by the data processing means it is output data. For example, when input data is analyzed and it can be judged as speech information, it can detect that the performed application software is a voice call. Furthermore, the detection means 2 is provided with the table which attached the priority for every cellular phone function corresponding to application software, and PHS telephone function, It is made as { acquire / from this table / the priority information corresponding to the application software performed by the data processing means 1 }. For example, when carrying out a file transfer, even when the access speed of a file transfer is high-speed, also at a low speed, it is possible, but. Since hour corresponding will become short and communication cost will also end at a low price if high-speed transmission is used, the priority No. 1 of the PHS telephone function in which high-speed transmission is possible is set up highly, and the priority of a cellular phone function is set as the following ranking. It seems that the priority No. 1 of a PHS telephone function is matched highly, and the priority of a cellular phone function serves as zero when it is a thing connectable only with ISDN by multimedia communication.

[0013]The signal S which shows whether the cellular phone 4 and the PHS telephone section 5 can communicate from the priority information which is an output of the detection means 2, and the Radio Communications Department A is supplied to the control means 6. A priority chooses the telephone section which can be high and can communicate among a cellular phone part and a PHS telephone section based on priority information and the signal S, and the control means 6 outputs a

switching signal. According to the switching signal from the control means 6, switching control of the means for switching 3 is carried out. As a result, the data processed with the performed application software is selectively supplied to the cellular phone part 4 or the PHS telephone section 5.

[0014] Drawing 2 shows the example in the case of carrying out selected designation of the application software which a user performs. The user can carry out by choosing the application software which can carry out selected designation, for example, is performed with pointing devices, such as a pen, by carrying out the direct entry of the application software performed for the selected designation means 7. The selected designation means 7 is provided with the table which attached the priority for every cellular phone function corresponding to application software, and PHS telephone function, and is made as [acquire / from this table / the priority information corresponding to the application software by which selected designation was carried out]. The selected designation means 7 supplies the priority information acquired by doing in this way to the control means 6. Direct supply of the output of the data processing means 1 is carried out to the means for switching 3.

[0015] Drawing 3 and drawing 4 show the example in at the time of connecting the portable information terminal equipment concerning this invention to a personal computer etc. The interface 8 is formed in order to make connection possible. By the case where the output data of a personal computer is supplied to the interface means 8, drawing 3 distinguishes the application software performed from input data. For example, when input data is analyzed and it can be judged as speech information, it can detect that the performed application software is a voice call. The detection means 2 outputs the priority for every [corresponding to the application software of the voice call] telephone function based on this type information. A priority chooses the telephone section which can be high and can communicate among a cellular phone part and a PHS telephone based on priority information and the signal S, and the control means 6 outputs a switching signal.

[0016] In drawing 4, it is a case where data and type information are supplied to the interface means 8 as an output from a personal computer etc. This type information shows what the performed application software is, and also when supplied with the data supplied besides in the case of being supplied separately from the data supplied to the interface means 8, it is included. The case where it is both supplied is a case where type information is included in the header in case the data supplied, for example has a header. The detection means 2 grasps what the application software performed based on this type information is, and outputs the priority information for every [corresponding to that application software] telephone function. A priority chooses the telephone section which can be high and can communicate among a cellular phone part and a PHS telephone based on priority information and the signal S, and the control means 6 outputs a switching signal to the means for switching 3.

[0017] Here, depending on the application software performed, any of a PHS telephone section and a cellular phone part are sufficient, and the priority of both wireless communication means becomes the same in this case. For example, since a PHS telephone section or any of a cellular phone part may be sufficient when the application performed is a voice call, the same priority will be set up. In this case, while detecting the present position information on portable information terminal equipment, a mail arrival partner's position information is detected from a message serial number, the table of the information about the fee beforehand registered based on the currency information of portable information terminal equipment and a mail arrival partner's position information is searched, and telex rate gold is compared. And priority can be given from the cheap thing of phonecall charges, and ranking can be determined.

[0018] Drawing 5 is a block diagram showing the example which enabled the change of the cellular phone part 4 by the size of these phonecall charges, and the PHS telephone section 5. The detection means 9 is a means to detect the current position of a personal digital assistant device. Detection of a current position

as indicated by the publication of patent applications (JP,6-120876,A), A burst signal including the base station identification information and the directive information which are transmitted while a base transceiver station changes directivity with portable information terminal equipment is received, and the position of portable information terminal equipment is detected based on received field intensity information. The electric wave transmitted from four or more satellites may be received, and GSP (Global Positioning System: global positioning system) which measures the position of portable information terminal equipment may detect. Since a message serial number is obtained when a user does the depression of the dial button of the Radio Communications Department, it supplies this to the control means 6. Or when the message serial number is contained in the data processing means 1, this is detected by the detection means 2 and it may be made to supply the control means 6. In this case, if it is made for a data processing means to output the header which can identify a telephone number apart from send data, the detection means can recognize a message serial number by recognizing this header.

[0019]The memory measure 10 memorizes the table of telex rate gold according to mail arrival area from the dispatch area of a PHS telephone or each cellular phone. The table of this telex rate gold enables it to correspond, when it memorizes to ROM at the time of shipment and a fee is reformed in the future only by exchanging this ROM. When the information about a fee is distributed via a base station from a communication enterprise, a memory rewritable to a Personal Digital Assistant device is provided, and this information can be memorized. Furthermore, storages, such as an IC card, can also be used. The control means 6 chooses the optimal telephone section of the wireless communication means A from the priority information acquired from the detection means 2, the priority of phonecall charges, and the signal S acquired from the Radio Communications Department A, and outputs a switching signal to the means for switching 3. Selection of the optimal telephone section is later mentioned based on drawing 6.

[0020]The priority of phonecall charges judges dispatch area from the current position of the portable information terminal equipment detected by the detection means 9, judges mail arrival area from a message serial number, and is determined here by comparing telex rate gold for every telephone function from the table of the telex rate gold memorized by the memory measure 10.

[0021]Drawing 6 is a flow chart showing the outline of change processing of this invention. It is detected by the detection means 2 what the performed application software is (S200). The priority corresponding to the detected application software is acquired from the table of the application software and the telephone function which are shown in drawing 7 (S201). For example, when a voice call is detected as application, the priority "1" of the column of the sequence 710 of a cellular phone function is acquired in the line 702 of the voice call of drawing 7. It turns out that a priority in case this chooses a cellular phone function with the application of a voice call is "1." The priority in the case of choosing a PHS telephone function similarly "1" (702 lines, 712 rows) will be acquired.

[0022]Next, comparison of the priority of a cellular phone function and a PHS telephone function is performed (S202). for example, the priority of a cellular phone function when a file transfer is detected as performed application software -- drawing 7 -- "2" -- similarly, the priority of a PHS telephone function is set to "1", and a priority will be higher for the PHS telephone function. When a voice call is detected as performed application software, the priority of a PHS telephone function is set to "1" by "1", and the priority of a cellular phone function will have a the same priority.

[0023]When the priority of a PHS telephone function is the same as the priority of a cellular phone function, the fee for every means of communication is compared (S203). Fee comparison is detected from the information which shows of which cell that received the present position information on portable information terminal equipment from the base station it is a base station, A mail arrival

partner's position information is detected from an origination telephone number, and telex rate gold is compared from the table shown in drawing 8 beforehand registered based on the currency information of a portable remote terminal device, and a mail arrival partner's position information. For example, when a mail arrival partner's telephone number is a "cellular phone." Regardless of a place-of-dispatch region, the line 800 of mail arrival "cellular phone" is chosen from drawing 8, and the fee "X1" (column of the line 800 and the sequence 810) of a cellular phone function and the fee "Y1" (column of the line 800 and the sequence 811) of a PHS telephone function are acquired. When a mail arrival partner's telephone numbers are "06" area, the current position of the portable information terminal equipment to send in "06" area, The line 801 of dispatch "06" of drawing 8 and arrival "06" is chosen, and the fee "X2" (column of the line 801 and the sequence 810) of a cellular phone function and the fee "Y2" (column of the line 801 and the sequence 811) of a PHS telephone function are acquired. And comparison of "X2" and "Y2" is made, if it is "X2>Y2", a PHS telephone function will be chosen, and if it is "X2<Y2", a cellular phone function will be chosen.

[0024]When the priority of a PHS telephone function is higher than the priority of a cellular phone function, or when a priority is the same and a PHS telephone function is chosen as a result of an above-mentioned fee comparison, judgment whether the PHS telephone section 5 can communicate is made (S204). Judgment of the communication propriety of the PHS telephone section 5 is made by the signal S acquired from the Radio Communications Department A. When communication was possible as a result, a change is performed to the PHS telephone section 5 (S206) and it is judged that communication is impossible, judgment of the propriety which can talk the cellular phone part 4 over the telephone is made. Judgment whether the propriety judgment which can communicate the cellular phone part 4 is suitable for communication according [the performed application software] to a cellular phone function, and judgment whether communication by a cellular phone part is possible are made (S207). For example, from drawing 7, the priority of a cellular phone function when what uses ISDN as performed application is detected is set to "0" (705 lines, 710 rows), and expresses communication impossible. In this case, a change in a cellular phone part is not performed, but a spawn process is ended (S209). On the other hand, when it is judged that the telephone call of the cellular phone part 5 is possible, when possible, a change is performed for the signal S of whether communication with the base station which a priority is "1" or "2", and is notified from the cellular phone part 4 is possible in the cellular phone part 5 (S208).

[0025]When the priority of a cellular phone function is higher than the priority of a PHS telephone function, or when a priority is the same and a cellular phone function is chosen as a result of an above-mentioned fee comparison, it is judged whether the cellular phone part 4 can communicate (S205). Judgment of the communication propriety of the cellular phone part 4 is made by the signal S acquired from the Radio Communications Department A. When communication was possible as a result, a change is performed in the cellular phone part 4 (S210) and it is judged that communication is impossible, judgment of the propriety which can talk the PHS telephone section 5 over the telephone is made. The propriety judgment which can communicate the PHS telephone section 5 is made by judgment whether the performed application software is suitable for communication by a PHS telephone function, and judgment whether communication by the PHS telephone section 5 is possible (S211). The performed application software is suitable for communication by a PHS telephone function, and when it can communicate, a change is performed to the PHS telephone section 5 (S212), when that is not right, it does not switch to the PHS telephone section 5, but processing is ended (S209). In an example, although the cellular phone function and the PHS telephone function were explained, this invention is not limited to these.

[0026]

[Effect of the Invention]In this invention, since the telephone function which

should be chosen by the application software and/or the fee to be used is changed automatically, operation becomes easy and improvement in convenience and reduction of telex rate gold can be aimed at. Since the telephone function which should be chosen by the application software to be used is switched automatically, it has an effect which can communicate by a means of communication suitable for the application software which a scarce person also uses for the knowledge of the communication condition of a telephone function. Since it switches to a telephone section with cheaper communication cost automatically based on the information about a fee, reduction of communication cost has an effect.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

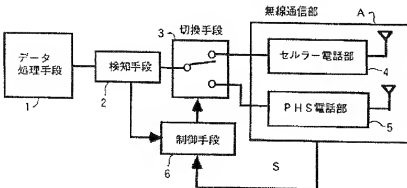
- [Drawing 1] The functional block diagram concerning this invention
- [Drawing 2] Other functional block diagrams concerning this invention
- [Drawing 3] Other functional block diagrams concerning this invention
- [Drawing 4] Other functional block diagrams concerning this invention
- [Drawing 5] Other functional block diagrams concerning this invention
- [Drawing 6] The flow chart figure showing the processing in the example of this invention
- [Drawing 7] The figure showing correspondence of the application software in the example of this invention, and a priority
- [Drawing 8] The figure showing the fee according to telephone function in the example of this invention

[Description of Notations]

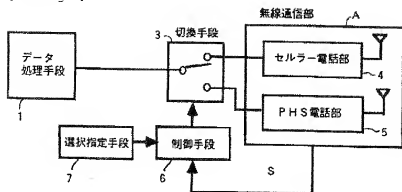
- 1 Application means
- 2 Detection means
- 3 Means for switching
- 4 Cellular phone part
- 5 PHS telephone section
- 6 Control means
- 7 Selected designation means
- 8 Interface
- 9 Detection means
- 10 Memory measure

DRAWINGS

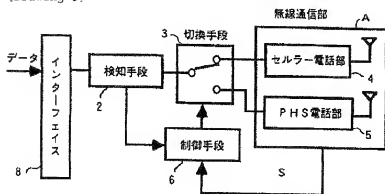
[Drawing 1]



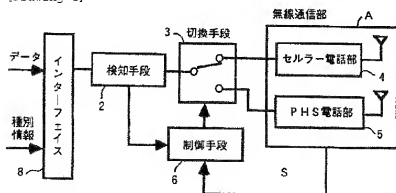
[Drawing 2]



[Drawing 3]



[Drawing 4]



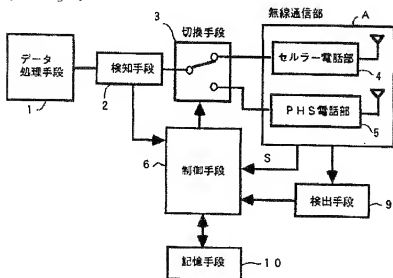
[Drawing 7]

	710	712	
	アプリケーション ソフトウェア	セルラー 電話機能	PHS 電話機能
701	ファイル転送	2	1
702	音声通話	1	1
703	パソコン通信	1	1
704	インターネットアクセス	2	1
705	マルチメディア通信 (I B D N 使用)	0	1

[Drawing 8]

地 域		セルラー 電話機能	PHS 電話機能	
科 目	番 号			
800	—	セルラー電話	X1	Y1
801	05	06	X2	Y2
802	05	06	X3	Y3
803	05	06	X4	Y4

[Drawing 5]



[Drawing 6]

